The hyperbola is, of course, the easiest to produce, and the parabola the most difficult. Some device for regulating the initial velocity and aim would be conducive to more uniform results.

Polarisation of the steel ball is apt to give trouble, and I have obtained some repulsion orbits where the ball turns back before reaching the centre, which are very pretty, but not desirable when one is trying to illustrate central attraction. Soft iron balls would be preferable to steel on this account; but they are not on the market, so far as I know, and the others answer the purpose well enough.

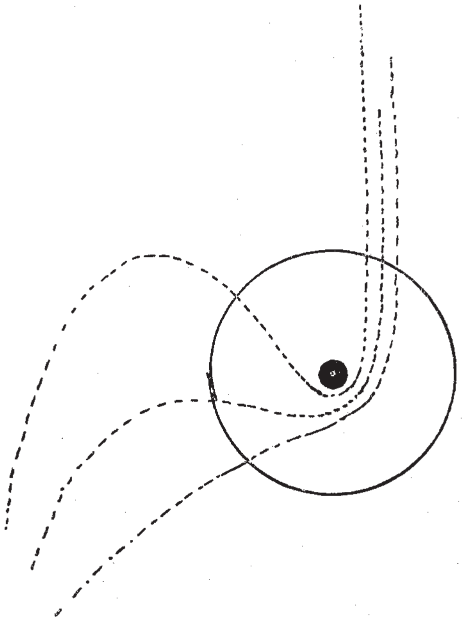


Fig. 3.

[*Supplementary Note.*—With a very powerful Rhumkorff magnet, belonging to the Massachusetts Institute of Technology, I have caused the ball to gyrate in a vertical plane about the poles, notwithstanding the perturbating influence of gravity. This elimination of the supporting plane makes the conditions a little more like those existing in the case of plantetary bodies moving in space; but the motion is so rapid that it is difficult to see the form of the curve, and no permanent record is left: moreover, the curves are distorted by the downward pull of gravity.

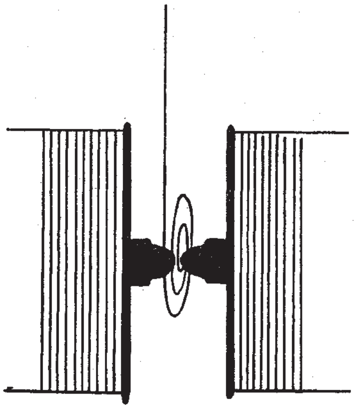


Fig. 4.

The two conical pole-pieces of the magnet were brought close together, creating a very intense field, and the ball was dropped from elevations varying from six inches to a couple of feet at different distances from the vertical plane joining the poles. Usually the ball flies either directly to the poles, or moves in a path similar to some one of those shown in Fig. 3 (the pole being seen end on); but on several occasions I have succeeded in causing it to perform two or three complete revolutions, as shown roughly in Fig. 4.] R. W. Wood.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

Cambridge.—Mr. Sidney Colvin has been appointed by the Council of the Senate a Trustee of the British Institution Scholarship Fund, in the room of the late Prof. Middleton.

The subject for the Adams Prize for 1899 is "The Theory of the Aberration of Light." The prize is open to all graduates of the University. Essays must be sent to the Vice-Chancellor by December 16, 1898. The value of the prize is about 200*l*.

Sixteen candidates have passed the examination in Sanitary Science, and will receive the University's diploma in Public Health.

The annual prize for an essay on an archæological subject offered by Newnham College has been this year awarded to Miss R. E. White (first class, Classical Tripos, 1895); the subject was "Women in Egypt under the Ptolemies."

It is understood that the syndicate on degrees for women, whose report was referred back to them for reconsideration, have agreed to adhere to their recommendations. The voting on the scheme in the Senate is expected to take place about May 20. An active canvass for and against their proposals is being conducted by Committees in Cambridge and London.

It has been decided to transfer the administration of the grants to schools in Scotland for science and art to the Scotch Education Department. The details of the transfer will be a matter of departmental arrangement.

The Legislature of the State of New York has passed a Bill authorising the appropriation by New York City of two and a half million dollars for the purpose of erecting the new public library to be built on the corner of Fifth Avenue and West Forty-second Street, and the Mayor has approved the Bill; so that the city is pledged to execute the work.

The following gifts and grants to educational institutions in the United States are announced in *Science*:—The Sheffield Scientific School of Yale University receives 25,000 dollars by the will of Mrs. Sarah Van Nostrand.—The department of natural history of Vassar College will receive about 25,000 dollars through the settlement of the will of the late Jacob P. Giraud.—A Bill before the Texas Senate appropriates for the State University 35,000 dollars for 1897 and 85,000 dollars for 1898, and in addition 42,000 dollars annually for the medical department.

SOCIETIES AND ACADEMIES.

London.

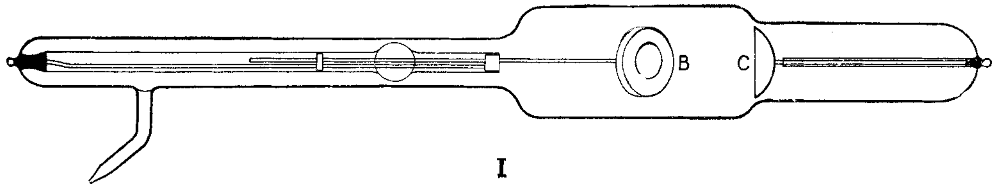
Royal Society, April 8.—"The Production of X-Rays of Different Penetrative Values." By A. A. C. Swinton. Communicated by Lord Kelvin. Received March 24.

If the X-rays coming from a focus tube of the ordinary type be observed with a fluorescent screen during the process of exhaustion, the penetrative value of the rays is found to change as the exhaustion proceeds. At less than a certain degree of vacuum, no X-rays are produced. As the vacuum increases, X-rays commence to show themselves, but of a quality that will do little more than penetrate the backing of the screen. At higher vacua the rays become more penetrative, and show the shadow of the bones of the hand. The point is next reached when the flesh of the hand is very transparent, while the bones are still quite opaque. At higher vacua than this, the bones become more and more transparent, till at length, at the very highest vacuum at which the discharge will pass, the bones become nearly as transparent as the flesh, while the whole hand throws but a very faint shadow on the screen.

Similar effects can be produced with a constant vacuum by gradually increasing the power of the Rhumkorff coil, or by varying the resistance of the tube by means of a magnetic field, the X-rays being most penetrative with great electrical power and high resistance in the tube, and least penetrative with low electrical power and low resistance.

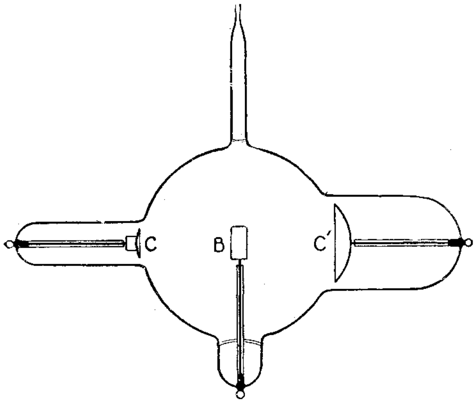
The author has further found that it is possible to vary the penetrative value of the X-rays produced by a focus tube, by simply altering the distance between the kathode and anti-kathode.

Fig. 1 shows such a tube, in which the anti-kathode B of aluminium, faced with platinum, is connected to the anode terminal by a sliding steel rod, so that it can be moved along the axis of the tube; and the distance between the kathode C and the anti-kathode B varied from 1 to 3 inches. With such a tube, exhausted so as to give X-rays of medium penetrative value, with the anti-kathode midway between its two extreme positions, if the anti-kathode be now placed nearer to the kathode, the X-rays immediately become of a higher penetrative value, just as though the vacuum had been increased; while again, when the anti-kathode is moved in the opposite direction, and placed at a greater distance from the kathode, the X-rays become less penetrative, and similar to those produced at a lower vacuum. In this way, without varying the vacuum, the penetrative value of the X-rays can be increased or decreased within limits, as desired.



I

Again, the author has found that the penetrative value of the X-rays can be altered by employing kathodes of different diameters. In the tube shown in Fig. 2, there are two kathodes, C and C′, both focussing upon opposite sides of the same anti-kathode B. The kathodes are of dissimilar diameter, C′ being about twice the diameter of C. If a tube of this type be exhausted to the degree necessary to give rays of medium penetrative value with the smaller kathode, and the connections are then altered so as to bring the larger kathode into operation, the X-rays are immediately found to have become of very low penetrative value. If the vacuum be then increased so that, with the larger kathode in use, X-rays of medium penetrative value are obtained, it will then be found that with the smaller kathode X-rays of much higher penetrative value are produced.



II

In all the above-mentioned experiments the author has found that the conditions which produce X-rays of high penetrative value are also the conditions that produce a considerable potential difference between the anode and kathode portions of the tube, and at the same time a high electrical excitation of the kathode.

On the assumption that kathode rays consist of negatively charged molecules that are repelled from the similarly electrified kathode, with an initial velocity that depends upon the degree of electrical excitation of the kathode, the conditions which, as above mentioned, produce X-rays of high penetrative value, are those that would conduce to a high average velocity of the molecules at the moment at which they strike the anti-kathode, and at the same time to a high average difference of potential between the travelling molecules and the anti-kathode at the moment of impact. Conversely the conditions which produce X-rays of low penetrative value, are such as would conduce to a lower average velocity of the molecules, and to a less difference of potential between the latter and the anti-kathode.

Further, since some molecules will strike the anti-kathode at higher velocities and in a more highly-charged state than others, the same hypothesis will account for X-rays being more or less hydrogenous under all conditions.

Finally, it appears that the penetrative value, as distinct from the quantity of X-rays, is independent of the material of which the anti-kathode surface is made. The author has made experiments with tubes fitted with anti-kathodes of aluminium, iron, copper, silver, and platinum, and finds that though the metals of high atomic weight form the most efficient anti-kathodes, and give a greater quantity of X-rays, as measured by photographic action, or by the brightness of a flurorescent screen, all these metals appear to give X-rays of the same penetrative value under similar conditions.

"Condensation of Water Vapour in the presence of Dust-free Air and other Gases." By C. T. R. Wilson, M.A., Clerk-Maxwell Student in the University of Cambridge. Received March 15.

The apparatus used enabled an exceedingly rapid expansion of any desired amount to be effected. The following is a summary of the results obtained.

If air, initially saturated and free from foreign nuclei, be allowed to expand suddenly, a rainlike condensation results if the ratio of the final to the initial volume v_2/v_1 exceeds 1·252; no condensation taking place except on the walls of the vessel with smaller expansions.

The number of the drops produced remains small if v_2/v_1 does not exceed 1·37. Beyond this point the number increases at an exceedingly rapid rate with increasing expansion, the cloudlike condensation which then results showing colour phenomena of a very definite kind.

In the presence of air, oxygen, nitrogen, or carbonic acid, rainlike condensation results when the expansion is sufficient to cause the supersaturation to exceed a certain limit amounting when the final temperature is − 6° C. to between 4·2 and 4·4, and diminishing with rising temperature.

By the supersaturation is here meant the ratio of the actual density of the vapour when the expansion has just been completed, and the minimum temperature has, therefore, been reached to the density of the vapour in equilibrium over a flat surface of water at that temperature.

The condensation is cloudlike in the presence of any of these gases or of hydrogen, when the expansion is sufficient to cause the supersaturation to exceed a certain value, amounting, when the final temperature is − 16° C. to about 7·9.

When the supersaturation reached lies between these limits rainlike condensation results in all these gases, except hydrogen, in which scarcely any trace of condensation is seen when the supersaturation is even slightly below 7·9.

A statement of the effect of the Röntgen rays on condensation in the presence of air has already been published. They cause a great increase in the number of the drops produced, the minimum expansion required to cause condensation being, however, unaltered. When hydrogen is substituted for air their effect is similar, the nuclei introduced by the action of the rays requiring the supersaturation to reach the same limit as is required for rainlike condensation in air, in order that condensation may take place upon them.

Chemical Society, March 25.—Mr. A. G. Vernon Harcourt, President, in the chair.—Prof. P. Frankland delivered the Pasteur Memorial Lecture (see p. 518).

March 31.—Anniversary Meeting.—Mr. A. G. Vernon Harcourt, President in the chair.—The Longstaff medal was presented to Prof. W. Ramsay, for the discovery of helium and for his share in the investigation of argon. After the reading of the President's address, the ballot for the election of Officers and Council for the ensuing year was held.

April 1.—Prof. Dewar, President, in the chair.—The following papers were read :—The hydrolysis of perthiocyanic acid, by F. D. Chattaway and H. P. Stevens. Perthiocyanic acid is readily hydrolysed by water at 200° or by heating with strong sulphuric acid, thiourea, carbon oxysulphide and sulphur being produced ; the thiourea found amongst the products of the action of strong sulphuric acid on potassium thiocyanate is certainly a product of hydrolysis of the perthiocyanic acid always produced in the reaction.—The composition of cooked fish, by Miss K. I. Williams. Determinations have been made of the constituents and heats of combustion of twenty-two species of fresh fish and five species of preserved fish and oysters after cooking. On the oxidation products of αγ-dimethyl-α′-chloropyridine, by Miss E. Aston and J. N. Collie. On oxidising αγ-dimethyl-α′-chloropyridine with permanganate α-chloro-γ-methyl-α′-pyridinecarboxylic acid and α-chloro-α-methyl-α′-pyridinecarboxylic acid are obtained.

Geological Society, April 7.—Dr. Henry Hicks, F.R.S., President, in the chair.—After the election of Fellows, the President left the chair, which was taken by Prof. Bonney, F.R.S.—The following communications were read :—On the Morte slates and associated beds in North Devon and West Somerset (Part ii.), by Dr. Henry Hicks, F.R.S.; with descriptions of the fossils by the Rev. G. F. Whidborne. In the first part of this paper, read by the author before the Society in February 1896, he described the Morte slates as they occurred in North Devon, and the fossils found in them. In this, the second part, he referred mainly to the rocks classified as Morte slates in West Somerset. The author contended that the Morte slates which extend through the centre of North Devon and West Somerset from Morte Point to the north of Wiveliscombe, a length of about forty miles, are the oldest rocks in the area and formed an axis with newer rocks lying to the north and to the south. In the discussion which followed the reading of the paper, Mr. Etheridge said he could not agree with the author upon the important question at issue, either as to the stratigraphical or palæontological evidence afforded by the Morte slates justifying the assertion that they were "the oldest rocks in North Devon" ; and he differed entirely from the author in the conclusions drawn, as based upon this assertion. Prof. Hughes thought that, taking the difference of sediment and other circumstances which tended to modify the distribution of life, no sufficient evidence had yet been offered to establish the author's principal contention. Mr. Marr remarked that the author had established one of his main contentions, namely, that the apparent succession in North Devon was not the true one. The Rev. H. H. Winwood remarked that whatever difference may exist in the two views as to the stratigraphy of the North Devon beds, yet one fact was indisputable, that the author had found fossils in the Morte slates which previous observers had failed to do. Mr. R. S. Herries said that he had been over part of the area with the author. He had not examined the south side, but he thought that on the north there could be no doubt that on stratigraphical grounds the Treborough slates belonged to a series entirely distinct from the beds immediately north of them. Dr. J. W. Gregory referred only to the palæontological questions, and not to the stratigraphical difficulties. He said the case for the Lower Devonian age of the fauna appeared, from the evidence quoted by the author, to rest on the *Cryphæus* (as the author preferred to call it) *laciniatus*. Dr. Hicks described this species as characteristically Lower Devonian ; but it was commonest at the extreme top of the Lower Devonian, as in the Vichtian beds, where it was associated with Middle Devonian forms. Gosselet quoted it from the Eifelian (Middle Devonian), and asserted its occurrence in the Upper Devonian. Hence the speaker doubted whether it proved much. The author replied to the various criticisms, but held that they did not affect his conclusions.—The President then resumed the chair.—The glacio-marine drift of the Vale of Clwyd, by T. Mellard Reade. The local drift of the higher parts of the Vale of Clwyd is replaced by marine drift towards the mouth ; and it was the object of this paper to give the results of a detailed examination of these marine drifts, rather than to explain the phenomena. The first part of the paper gave the results of an examination of the boulder-clay from Craig, west of Llandulas, to the Vale of Clwyd, south-east of Abergele. Mechanical analyses of the clays were given ; but the point of greatest interest was the occurrence of abundance of foraminifera, especially in the plastic brown and red boulder-clays, which often contain intensely striated erratics. Mr. Strahan drew the attention of the author to Prof. Hughes's exhaustive papers on the drifts of the Vale of Clwyd. The occurrence of foraminifera was to be expected in clay so similar to that of Cheshire, in which they had long since been recorded by Mr. Shone. Prof. Hughes said that he had laid pretty fully before the Society his views as to the origin and classification of the drifts of the Vale of Clwyd (*Quart. Journ. Geol. Soc.*, vol. xliii., 1887, p. 73) ; and he gathered from the exposition of Mr. Mellard Reade's recent observations in that area, that the foraminifera which he had obtained all occurred in the newer or St. Asaph drift. This had all the characteristics of the shore-deposits on that coast at the present day.

Royal Meteorological Society, April 21.—Mr. E. Mawley, President, in the chair.—Mr. W. H. Dines read a paper on the relation between cold periods and anticyclonic conditions of weather in England during the winter. There seems to be a generally accepted belief that anticyclonic conditions during the winter are likely to be accompanied by exceptional cold ; but, in so far as England is concerned, the author's observation has led him to the opposite conclusion, and he always expects a frost to break up as soon as the barometer gets much above 30·00 inches. To test the truth of this theory he tabulated the height of the barometer for all the cold periods during the three winter months of the fifty years 1841-90. Out of 74 frosts, he found that 16 only had a pressure exceeding 30·20 inches, and the majority of these were of very short duration. Thirty-three, or less than half, had a pressure exceeding 30·00 inches. Twenty-one had a pressure below 29·80 inches, and these included almost every frost in the period remarkable for its length or severity.—A paper by Mr. A. Lawrence Rotch, of the Blue Hill Observatory, Mass., was read, describing the use of kites at that observatory to obtain meteorological records in the upper air. Three kinds of kites have been used, viz. (1) the Malay kite, which presents a convex surface to the wind ; (2) the Hargrave cellular kite ; and (3) a flat kite with a fin or keel on the front, devised by Mr. Clayton. These kites are attached to a wire carrying self-recording meteorological instruments, and a steam winch automatically distributes the wire on the drum and records its pull. The instruments have been elevated more than one hundred times, and valuable meteorological data as to the changes of temperature, humidity, and wind up to an extreme altitude of 8740 feet above Blue Hill have been obtained.—A paper by Mr. A. B. MacDowall, on suggestions of sunspot influence on the weather of Western Europe, was also read. The author believes that there is a tendency to greater heat in the summer half-year, and to greater cold in the winter half-year near the phases of minimum sunspots than near the phases of maximum ; the contrast between the cold and heat of the year thus tending to be intensified about the time of minimum sunspots.

PARIS.

Academy of Sciences, April 20.—M. A. Chatin in the chair.—On the classification of the Insemineæ ; the subdivision of the Unitegemineæ or Icacinineæ, by M. Ph. van Tieghem. A continuation of previous papers on classification.—Determination of the surface, stoutness, and chemical composition of the human body, by M. Ch. Bouchard. A series of formulæ is developed giving empirically the relations between the surface, weight, height, and girth. The factor varies with the sex, and also with the corpulency of the individual, the latter being defined by the ratio of the weight to the height.—Details of the methods employed in exact cryoscopical researches, by M. F. M. Raoult. The results of some experiments on the constancy obtainable for the convergent temperature are given, and the conclusion is drawn that it is comparatively easy to arrange matters so that the disturbing effect of the temperature of the refrigerant may be completely neutralised, the accuracy of the measurements taken with the precautions indicated being 0°·0005.—On the physiological action of the X-rays, by M. W. Crookes. The effects produced by the X-rays vary greatly with the idiosyncrasy of the experimenter, no evil effects having followed even prolonged exposure to the rays in the case of the author.—Comparison between the absorption by crystallised media of luminous rays and the Röntgen rays, by M. V.

Agafnoff. No sort of parallelism appears to exist between transparency to ultra-violet rays and the Röntgen rays, the sulphates, for example, being nearly opaque to the latter, although very transparent to the former. The reverse of this occurs with most crystallised organic compounds.—On dark light, by M. Perrigot. The results obtained by M. G. Le Bon, stated by him to be due to special rays, the "dark light," are shown to be capable of another explanation, the ebonite sheet used being itself slightly transparent to white light.—On the separation of chlorine and bromine, by MM. H. Baubigny and P. Rivals. In presence of an excess of copper salts (sulphate), bromides are totally decomposed in neutral solutions at the ordinary temperatures. The application of this method to test mixtures of chlorides and bromides gave satisfactory results.—Separation of nickel, cobalt, and iron, and of cobalt and aluminium, by M. E. Pinerua. Chloride of nickel is quite insoluble in ether saturated with hydrogen chloride, the chlorides of cobalt and iron, on the other hand, being easily soluble in this reagent. The method is sufficiently sensitive to detect the presence of nickel and iron in the "pure" cobalt chloride of commerce, and cobalt and iron in the nickel chloride sold as pure.—On cholesterine, by M. Ch. Cloëz.—On the grafting of *Helianthus annus* and *Helianthus lætiflorus*, by M. L. Daniel.—The proper motion of the sun, by M. Delauney.—On a new gas battery, serving as an accumulator, by M. C. Gaudet.

DIARY OF SOCIETIES.

THURSDAY, APRIL 29.

ZOOLOGICAL SOCIETY, at 4.—Annual Meeting.

CHEMICAL SOCIETY, at 8.—Monochlordiparaconic Acid and some Condensations: Dr. H. C. Myers.—On the Decomposition of Iron Pyrites: W. A. Caldecott.

CAMERA CLUB, at 8.15—The Automatic Telephone: S. B. Apostoloft.

FRIDAY, APRIL 30.

ROYAL INSTITUTION, at 9.—Kathode Rays: Prof. J. J. Thomson, F.R.S.

EPIDEMIOLOGICAL SOCIETY, at 8.—Some Observations on the Infectivity of Diphtheria, and its Relation to School Closure: Dr. Louis Parkes.

SATURDAY, MAY 1.

ROYAL INSTITUTION, at 5.—Annual Meeting.

GEOLOGISTS' ASSOCIATION.—Excursion to Cookham. Leave Paddington 1.40 p.m.; arrive Cookham 2.30 p.m. Director: Ll. Treacher.

LONDON GEOLOGICAL FIELD CLASS.—Excursion to Leith Hill. Lower Greensand. Leave London Bridge, 2; arrive Holmwood, 3.17.

MONDAY, MAY 3.

SOCIETY OF ARTS, at 4.30.—Design in Lettering: Lewis Foreman Day.

SOCIETY OF CHEMICAL INDUSTRY, at 8.

VICTORIA INSTITUTE, at 4.30.—Nippur: its Inscriptions.

CAMERA CLUB, at 8.15.—Opening Address: Captain W. de W. Abney.—Photography at Sea: Captain Wilson Barker.

TUESDAY, MAY 4.

ROYAL INSTITUTION, at 3.—Volcanoes: Dr. Tempest Anderson.

SOCIETY OF ARTS, at 4.30.—The Arctic and Antarctic: Aubyn Trevor-Battye.

ZOOLOGICAL SOCIETY, at 8.30.—On the General Zoological Results of the Tanganyika Expedition of 1895–96: J. E. S. Moore.—On some European Slugs of the Genus *Arion*: Walter E. Collinge.—Field-Notes on the Antelopes of the Mau District, British East Africa: Frederick J. Jackson. With Notes by P. L. Sclater.

ROYAL VICTORIA HALL, at 8.30.—Mountains of Skye: Dr. T. K. Rose.

GRESHAM COLLEGE (Basinghall Street), at 6.—Planets Saturn, Uranus, and Neptune: Rev. Edmund Ledger.

WEDNESDAY, MAY 5.

SOCIETY OF ARTS, at 8.—The Railway to India: C. E. D. Black.

ENTOMOLOGICAL SOCIETY, at 8.—Homœochromatic Groups of Butterflies: Mr. Blandford.

SOCIETY OF PUBLIC ANALYSTS, at 8.—The Value of the Nitrogen Factor in the Analysis of Decomposed Milks: Alfred Smetham and J. B. Ashworth.—Notes on the Influence of Boric Acid upon the Action of Digestive Ferments: R. A. Cripps.

GRESHAM COLLEGE (Basinghall Street), at 6.—Planets Saturn, Uranus, and Neptune: Rev. Edmund Ledger.

THURSDAY, MAY 6.

ROYAL INSTITUTION, at 3.—Liquid Air as an Agent of Research: Prof. J. Dewar, F.R.S.

SOCIETY OF ARTS, at 4.30.—Kafiristan: its Manners and Customs: Sir George Scott Robertson, K.C.S.I.

LINNEAN SOCIETY, at 8.

CHEMICAL SOCIETY, at 8.—A Bunsen Burner for Acetylene: A. E. Munby.—On the Reactions between Lead and the Oxides of Sulphur: H. C. Jenkins and A. E. Smith.—Ballot for Election of Fellows.

GRESHAM COLLEGE (Basinghall Street), at 6.—Planets Saturn, Uranus, and Neptune: Rev. Edmund Ledger.

FRIDAY, MAY 7.

INSTITUTION OF MECHANICAL ENGINEERS, at 7.30.—Experiments on Propeller Ventilating Fans, and on the Electric Motor driving them: William G. Walker.

GEOLOGISTS' ASSOCIATION, at 8.—Coral Islands: W. W. Watts.

GRESHAM COLLEGE (Basinghall Street), at 6.—Planets Saturn, Uranus, and Neptune: Rev. Edmund Ledger.

SATURDAY, MAY 8.

ROYAL BOTANIC SOCIETY, at 4.

GEOLOGISTS' ASSOCIATION—Excursion to Southborough and Tunbridge Wells. Director: G. Abbott. Leave Charing Cross Station (S.E.R.) 9.22 a.m.; arrive Southborough 10.50 a.m.

LONDON GEOLOGICAL FIELD CLASS.—Excursion to Caterham to Redhill, *viâ* Godstone. Upper Greensand. Leave Cannon Street 2.17; arrive Caterham 3.12.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

BOOKS.—Queen's College, Galway, Calendar for 1896–97 (Dublin, Ponsonby).—Royal University of Ireland, Exam. Papers, 1896 (Dublin, Ponsonby).—Les Transformateurs de Tension a Courants Alternatifs: F. Loppé (Paris, Gauthier-Villars).—A Treatise on Practical Plane and Solid Geometry: T. J. Evans and W. W. F. Pullen (Chapman).—Società Reale di Napoli. Atti della Reale Accademia delle Scienze Fisiche e Matematiche. Serie seconda, vol. viii. (Napoli).—Respiratory Proteids: Dr. A. B. Griffiths (L. Reeve).—Tea: a Text-book of Tea-planting and Manufacture: D. Crole (Lockwood).—The Materials of Construction: Prof. J. B. Johnson (New York, Wiley; London, Chapman).—Festschrift zum Siebenzigsten geburtstage von Carl Gegenbaur, Dritter Band (Leipzig, Engelmann).—Royal University of Ireland, Calendar 1897 (Dublin, Thom).—The Pamirs and the Source of the Oxus: G. N. Curzon (Royal Geographical Society).

PAMPHLETS.—Fünfter Jahres-Bericht des Sonnblick-Vereines für das Jahr 1896 (Wien).—The Street Railway System of Philadelphia: Prof. F. W. Speirs (Baltimore).

SERIALS.—Proceedings of the Physical Society, April (Taylor).—Journal of the Institution of Electrical Engineers, April (Spon).—Journal of the Chemical Society, March (Gurney).—Lloyd's Natural History. British Birds: Dr. R. B. Sharpe, Parts x. and xi. (Lloyd).—American Naturalist, April (Philadelphia).—Journal of the Franklin Institute, April (Philadelphia).—Terrestrial Magnetism, March (Cincinnati). Bulletin de la Société Impériale des Naturalistes de Moscou, 1896, No. 3 (Moscou).—Beiträge zur Geophysik, 3 Band, 2 Heft (Leipzig, Engelmann).—Journal of the Sanitary Institute, April (Stanford).—Zeitschrift für Physikalische Chemie, xxii. Band, 3 Heft (Leipzig, Engelmann).—Studien über Dampfspannkraftmessungen, 2 Abthg. 1 Hälfte (Basel, Schwabe).—Lean's Royal Navy List, April (Witherby).—English Illustrated Magazine, May (198 Strand).—Good Words, May (Isbister).—Sunday Magazine, May (Isbister).—Astrophysical Journal, April (Chicago).—Longman's Magazine, May (Longmans).—Quarterly Review, May (Murray).

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